Establishment patterns of non-native fishes in the lower St. Louis River, a Great Lakes invasion "hotspot".

U.S. EPA (MED-duluth)
Greg Peterson, Joel Hoffman, Anett Trebitz, John R. Kelly

U.S. Fish and Wildlife Service (FRO-Ashland, WI)
Josh Schloesser, Gary Czypinski

Establishment success (numerically or spatially) of an introduced non-native fish species is difficult to predict and its relative status in a fish community can be difficult to measure. We conducted a 2-year, multi-gear survey in the lower St. Louis River, including the Duluth–Superior harbor (an invasion "hotspot"), to quantify the contribution of non-native species to the overall fish assemblage and assess their spatial distribution and abundance. We captured 10 non-native fish species (no new detections) which composed roughly one quarter of the total species richness. Non-natives were found in 84% of samples, and composed 15% of the total abundance. The time since first detection of non-native fishes was not predictive of their frequency of occurrence across the study area, underscoring the importance of environmental and biological factors in controlling fish establishment success. The perception of a non-native species' status was influenced by sampling gear (and thereby habitat), abundance measure (e.g., abundance or biomass), and the spatial scales examined. To assess relative distribution and abundance of non-native fishes, we used an establishment framework to integrate catch data from different gears. Viewed in this context, only two non-native fishes, Eurasian ruffe (*Gymnocephalus cernuus*) and round goby (*Neogobius melanostomus*), were identified as both widespread and abundant, whereas three non-native fishes were identified as localized and rare. Through this establishment framework lens we look at variability and recent patterns of non-native fishes "status" in the lower St. Louis River.